



2820 132nd Ave. SE, Snohomish, WA 98290

Tel: 425 870-8481

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Mr. Ricardi Duvil, Ph.D.
Environmental Engineer
U.S. Environmental Protection Agency
Office of Water & Watersheds
Drinking Water Unit Region 10
1200 Sixth Ave., Suite 900 OWW-193
Seattle, WA 98101

**SUBJECT: Copper Pipe Removal and Replacement Project
7 Cedars Casino
Sequim, Washington**

Dear Mr. Duvil:

As per your request on July 13, 2017, ESA Associates is providing a summary of additional water sampling results for the water serving the 7 Cedars Casino (7CC). On June 27, 2017, water samples were collected at 7CC for analysis of lead and copper. Copper levels in the bar sink and service station sink of the Totem Restaurant were above the EPA's action level of 1.3 mg/L. Mr. Ron Sather, the facility manager for 7 CC, determined that the pipes leading to these two areas still had copper piping attached to the final plumbing fixtures. This copper was removed on July 17, 2017. On July 21, 2017, the ten sampling points were resampled. Chemical analytical results of this sampling indicated that copper levels were reduced to levels below the EPA action level in the two areas previously found to exceed action levels in the Totem Restaurant area. The July 21 sampling event also revealed that area CA-23, the Salish Restaurant sink, had copper levels exceeding the action level at 3.78 mg/L. This area also had copper pipes leading to the faucet that were left in place due to the logistical constraints of accessing the pipes within the wall. Additional sampling was conducted on July 25, 2017 and submitted to a separate laboratory to confirm Spectra Analytical's results. The chemical analytical results indicated similar findings for all ten sampling points.



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Two additional areas CA-26 (Napoli service bar) and CA-27 (Rainforest bar sink) were getting close to or just exceeding the EPA action level for copper, therefore, any copper piping that was left in place in these areas was removed and replaced with PEX on July 25, 2107. These areas were resampled on July 26, 2017. The chemical analytical results indicated that the copper concentrations in these areas (CA-23, CA-26, and CA-27) are now below the EPA action level for copper. As a result of the latest copper replacement in the 7CC, copper concentrations from all ten sampling points are now below the EPA action level of 1.3 mg/L.

As requested by the EPA on July 17, 2017, water quality parameters were taken at the distribution port and at the two sites previously exceeding the EPA action level (CA-19 and CA-05). Two sets of samples at each entry point to the distribution system were taken one week apart. The water quality parameters included the following:

- pH (measured in the field)
- Alkalinity
- Calcium
- Conductivity
- Water temperature

The results of the water quality testing indicated that the water serving the 7CC remains moderately corrosive. The distribution port has copper at a concentration of 0.86 mg/L. The temperature at the time of sampling two weeks apart for the distribution port was 64.8° and 65.2°, respectively. The concentration of copper at the wellhead is non-detect (<0.02 mg/L). Therefore, the copper is not coming from the source. The temperature of the raw port at the time of sampling was 51.1°. As demonstrated by replacing any small areas of copper piping in the Totem Restaurant, Salish Restaurant sink, Napoli service bar, and Rainforest bar sink, the copper concentrations at these sampling points were reduced to concentrations below the EPA action level as a direct result of removing the copper pipes and replacing them with PEX.



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There remains six feet of copper piping that goes from the outside line to the meter that will not be replaced at this time due to logistical constraints. This area is beneath a concrete slab and access to it would require substantial disruption of the 7CC activities. The Tribe understands that as long as there are areas of copper piping left in place, copper will continue to be released from those pipes and may impact the drinking water quality at 7CC.

We anticipate that the one section left in place below the concrete slab will contribute a very small amount of copper into the system. The Tribe will continue to monitor the 7CC water as directed by the EPA.

If you have any questions, comments, or require additional information, please contact the undersigned at (425) 870-8481.

Respectfully submitted,

ESA ASSOCIATES, INC.

Kristen Burgess
President